

Orlando Sentinel

2019 HURRICANE
SURVIVAL GUIDE

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LESSONS LEARNED

Hurricane Michael's unexpected strengthening last fall underscores forecasting challenges

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BROOKS TOMLIN
Meteorologist

Stay prepared despite less-active forecast

BY GLENN RICHARDS

The 2019 hurricane season will be slightly less active than normal.

This upcoming season is advertised to be 55 percent of normal activity with 13 named storms, five becoming hurricanes while two will be intense hurricanes of Category 3 strength or greater.

It appears that the El Nino pattern will persist through the summer season and could possibly strengthen in August through September as we enter the period of maximum water temperatures.

The El Nino will hamper storm development across the tropical Atlantic due to increased vertical wind shear.

Water temperatures across the entire Atlantic basin are running slightly cooler than normal. The slightly cooler waters will decrease the intensity of developing tropical systems in addition to killing off tropical waves prior to their development.

I anticipate that many “wanna-be” systems will have a healthy outflow and upper level environment, but may not be able to overcome the lack of thermal energy or the hostile wind shear above. The few tropical waves that do manage to become a tropical storm or



Richards

hurricane will find that the cooler waters will limit their growth and the wind shear will shorten their overall duration.

Always remember that what really matters is where the tropical storms and hurricanes make landfall.

Currently there is a 48 percent (average last century is 52 percent) chance across the entire U.S. coastline of a major hurricane making

landfall. Even if we have 20 hurricanes form, and none strike land, then the season ends up “feeling” very quiet.

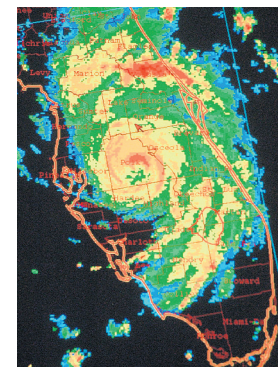
Currently our steering currents appear to be setting up a scenario where lower pressures will occur across the central and western Atlantic. These lower pressures will aid in turning any Atlantic system prematurely to the north and keep Florida in the clear.

These lower pressures also will aid in producing more wind shear across the Gulf of Mexico. This hostile shear environment would rip apart tropical systems as they move north towards the U.S.

Make sure we stay prepared for the potential of at least one tropical system striking this season. It only takes one system to make for a bad year.

Glenn Richards is chief meteorologist for Fox 35.

Inside



15 years ago: Charley, Frances, Ivan, Jeanne walloped Florida

Central Floridians will never forget the 2004 hurricane season, when Charley's path took an unexpected turn and drove through the I-4 corridor (left) on Friday, Aug. 13. The storm was the first of four hurricanes in a six-week span that left the Sunshine State reeling. **Photos, 8-9**

Cover story: Forecasters and the public can learn from powerful hurricanes Michael, Irma and Matthew, **4**

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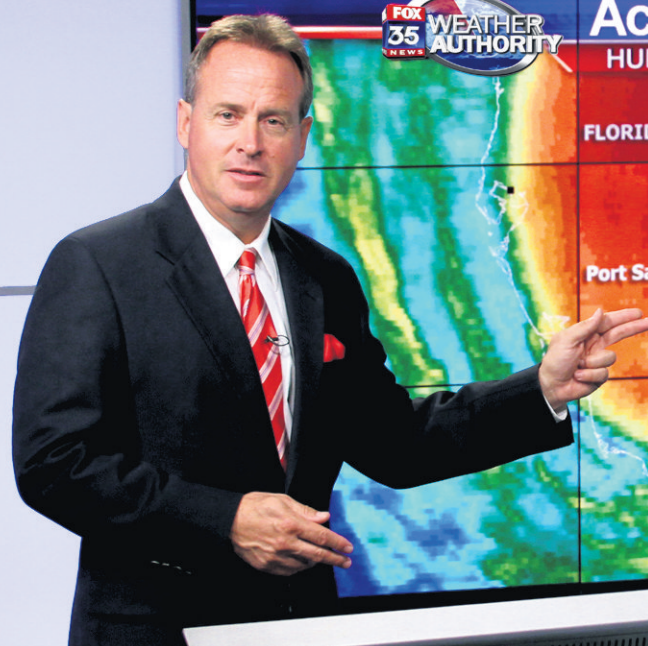
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On the cover: An aerial view of Mexico Beach shows Category 5 Michael's widespread destruction last October. Photo by Joe Raedle, Getty Images

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Chief Meteorologist
GLENN RICHARDS



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BE PREPARED: 5 IMPORTANT THINGS TO DO BEFORE THE STORM

When a hurricane is approaching, there often isn't time to prepare your home properly to prevent damage. To keep your family and belongings safe this Hurricane Season, here are five important things you can do right now to protect your home.

1 Reinforce exterior doors

Exterior doors, regardless of the home's age, need reinforcement to handle strong winds. Installing a dead bolt is the best answer; even if you already have one, an additional bolt kit at the top and/or bottom of your doors will provide additional stability. Don't forget your garage door, too. It's traditionally the most vulnerable exterior door and easily overlooked. Reinforcement kits can be found at most home improvement stores for around \$500 and are easily installed.

2 Prepare your window covering

Your windows are vulnerable to numerous threats from a hurricane. Heavy winds can launch projectiles through the glass; changes in air pressure can cause bowing, rattling and cracks; rain can seep in at the edges. You can easily add weather stripping to improve the window seal and reduce leakage.

Most people immediately picture huge sheets of plywood, boarding up at the last minute. Avoid this by installing professional storm

shutters, which provide maximum security when needed. This can be cost prohibitive, though, so consider pre-cut plywood covers, sized to each window and labeled for easy installation when the storm is approaching. Whatever material you choose, be ready before the rush and avoid the huge lines for scarce plywood at the local lumber stores. And remember, taping up windows does nothing to protect your home.

3 Inspect and repair your roof

Your home is your biggest investment. Your roof is what protects your home, your family and many irreplaceable items inside. Most people never really look at their roof close enough to notice any damage or issues. Loose, missing or worn shingles, gaps in seals, and hail damage are very easy to overlook. These areas are vulnerable to leaks whenever a storm, small or large, comes along.

Proper roof maintenance is a necessity if you want to maintain your home's value and keep your family and belongings safe. A roof inspection is the best way to get peace of mind. Taking the time to have your roof evaluated by a professional contractor could save you a huge headache when a storm has passed and thousands have storm damage. Jasper Contractors offers free shingle and tile roof inspections and is equipped with a highly trained team.

If your roof has existing damage, you may even qualify for a new roof.

4 Prepare for loss of utilities

The most common immediate fallout from a hurricane is the loss of electricity. Before the storm arrives, turn your refrigerator and freezer to their coldest settings. This helps your food last much longer without power. Consider a generator and room air conditioner, if you choose to stay in place. Be sure to unplug appliances, especially TVs and computers, to avoid power surges or lighting strikes. Before the storm, locate your Main Electrical Panel and know how to turn off power to your entire home.

You should also know how to turn off your main water valve. During and after a hurricane, there can be loss of pressure, pipe damage, or, most commonly, a contaminated water supply. A storm surge or flooding can affect fresh water, making it necessary to boil or decontaminate water before drinking or bathing. The best option is to prepare in advance, by storing one gallon of fresh water per person per day, for as many days as you can. Drinking water can be stored in bottles and coolers, but it is not recommended that you drink water stored in bathtubs. One great idea is to freeze water in bottles before the storm, so it can provide sanitized cooling for food, then melt into drinking water.

5 Have a place for everything in advance

Knowing where everything and everyone will be during the storm BEFORE the storm is crucial. Have a meeting place – inside the home for maximum structural protection (closet, bathroom) and outside the home in case of severe damage that forces evacuation (car, backyard). Gather important items like cell phones, wallets, important papers or medication, into one water-proof bag. Make a checklist and prepare in advance.

All loose items outside should have a predetermined place to weather the storm. Grills, patio furniture, plants, trash cans – all these and more need to have places they'll fit when the time comes. A garage, shed, covered patio, even the pool can be a good place to keep your belongings from flying loose, causing damage to your home.

Taking time now to organize, prepare and protect your home before a hurricane can pay huge dividends afterward. Saving time, money and inconvenience can be as easy as taking some simple actions now, like a roof inspection, storm shutters or garage door reinforcement, before it's too late.



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GERALD HERBERT/AP

Category 5 Hurricane Michael delivered a devastating blow to the Panhandle and especially Mexico Beach, above, last October. The storm became much stronger than expected.

COVER
STORY

WHAT MICHAEL, IRMA and MATTHEW TAUGHT US

“People think they are going to have a lot of time to watch a storm like an Irma ... Michael was a pretty stark reminder that that is not always the case.”

— Michael Brennan of the National Hurricane Center

BY KEVIN SPEAR

Florida will start the 2019 hurricane season powerfully informed by Matthew’s scary miss of the east coast in 2016, the statewide crushing from Irma in 2017 and Michael’s brutal assault on the Panhandle last year.

Each of those monster storms was different in nature but none devastated a metropolitan area, something forecasters say will happen sooner or later.

Michael was particularly chilling for experts. It gained far more intensity than expected and, making landfall on Oct. 10, came as the June 1 to Nov. 30 hurricane season was winding down.

“Michael was more than a month later than the previous, strongest mainland U.S. landfalling hurricane we’ve ever seen,” said meteorologist Jeff Masters, a founder of the internet-based weather service, Weather Underground.

He said the storm would not have gotten so strong if Florida had not had its hottest September on record last year; the record warmth heated Gulf waters 2 to 3 degrees above average and that lingered into October.

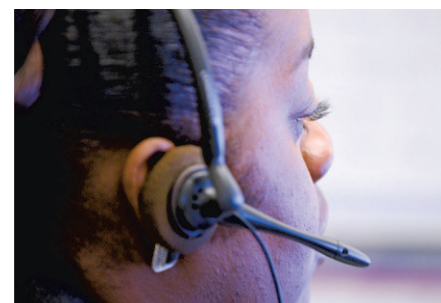
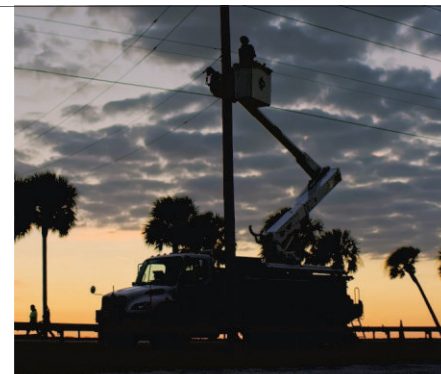
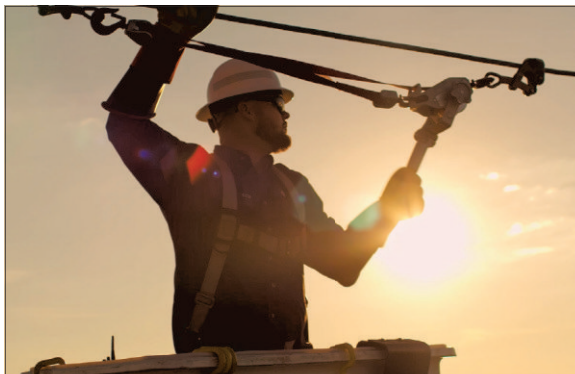
“Hurricanes are heat engines,” Masters said. “You heat up the ocean, you provide them more energy. They take that heat energy and they convert it to the energy of their winds.”

Until Hermine hit in September 2016, Florida had not had experienced a hurricane strike for more than a decade.

But it was Matthew, topping out in the Caribbean as a Category 5 in October that year, that woke up the state’s east coast, with former Gov. Rick Scott warning residents “this storm will kill you.”

Matthew wound up skirting the coast, triggering costly flooding in St. Augustine

Please turn to **LESSONS, 6**



Knowledge is Power

Stay informed this hurricane season.

If the power goes out, our outage alert system will notify you, wherever you are, by text, voice message or email. We'll also provide status updates and estimated restoration times. Sign up online for phone or email alerts or text REG to 57801 for text alerts. To report an outage, text OUT to 57801 or visit our website. We'll keep you informed every step of the way.



Here are a few simple precautions you can take to be ready ...

Have a portable radio, TV or NOAA Weather Radio on hand.

Have a plan to move yourself and your family – especially those with special needs.

Keep a supply of water and nonperishable food items on hand.

Ensure first-aid supplies and all medicines are readily available.

If you have an emergency power source, learn how to use it properly.

For additional tips, please visit our storm safety page at duke-energy.com/FLStormReady.



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Why was Michael so powerful?



Tomlin

BY BROOKS TOMLIN

When Hurricane Michael made landfall near Mexico Beach in Florida last October, it did so as one of the strongest storms in United States history. One measure of a hurricane's intensity and strength is barometric pressure. The lower the pressure, the stronger the

storm.

Only the unnamed 1935 Labor Day Hurricane (892 mb) which hit the Florida Keys and 1969's Hurricane Camille (900 mb) which hit Mobile, Ala., were stronger than Hurricane Michael (919 mb) at landfall.

Across the globe, average barometric pressure is roughly 1013 mb, and pressure differences cause wind flow. Lowering barometric pressures must increase wind speed to maintain their low pressure.

What were the factors which led to Hurricane Michael being so strong?

Like any hurricane, it had a center of circulation with ample convection. The circulation gained organization and strength over the western Caribbean and southern Gulf of Mexico, both of which have ample warm water to depth in early October.

Upwelling — subsurface cool water rising to the surface — can inhibit tropical system strengthening, but the vertically deep warmth of the western Caribbean Sea maintained the fuel for Michael to form and strengthen. Once over the Gulf of Mexico, further deep warm water continued to serve as high-octane fuel. The atmosphere was especially conducive for Michael to develop as well. Hurricanes like a tranquil atmosphere, vertically aloft. They do not like strong winds aloft, jet streams and dry air.

Cold fronts can cause a tropical storm or hurricane to weaken or dissipate, but Michael did not encounter any until after landfall. The dome of warm, humid air stretched far north from the Gulf of Mexico. As a matter of fact, on Oct. 8 and 9, Chicago had high temperatures of 85 degrees each day. There was ample tropical air and warm ocean waters for Hurricane Michael to strengthen.

As Hurricane Michael began to accelerate towards the Florida Panhandle, the barometric pressure continued to deepen, winds continued to strengthen and an approaching cold front (and associated jet stream) helped vent and disperse the highest clouds. Together, these features allowed Hurricane Michael to make landfall as a Category Five storm, the strongest hurricane possible.

This begs the question, "Are we likely to see more storms with the power of Hurricane Michael in the future?"

In a way, Michael was aided by fortune. The center of circulation formed and strengthened over a body of deep warm water. That same center of circulation traversed between Cuba and the Yucatan peninsula; any deviation just miles east or west would have caused land interaction with Michael, likely weakening the storm. A giant, warm, humid air mass stretched all the way north to the Great Lakes, aiding Michael's rapid development.

If any of these conditions are present for a future storm, we could witness a similar situation.

Brooks Tomlin is a Fox 35 meteorologist.



STEPHEN M. DOWELL/ORLANDO SENTINEL

Matthew washed out part of State Road A1A in October 2016 near Flagler Beach. The storm skirted Florida's east coast.

LESSONS

Continued from Page 4

and tearing up State Road A1A north of Daytona Beach.

A key and sobering eye-opener from Matthew was that for a storm traveling parallel with Florida's coastline, even a tiny error in the forecast for where it will make landfall can mean the difference between clobbering several cities or remaining offshore just enough to avert disaster.

Also maxing out as a Category 5 early in its journey, Hurricane Irma vexed residents and forecasters with frequent changes in its apparent route toward Florida.

It was the size of Texas as it finally churned north along a path just west of the center of the state's peninsula spine, flooding and damaging cities on both coasts.

The storm was blamed for more than 80 deaths in Florida, epic episodes of evacuees stranded on roads and massive sewage spills caused by the worst outages on record for many utilities.

As its executives would later apologize for when speaking to state lawmakers, Duke Energy in particular was revealed to be poorly prepared for the storm; the utility's response was hampered by equipment failures and poor coordination. Duke is Central Florida's largest power provider.

Last year, Michael was one of the most powerful storms ever to strike the U.S. It hit near Mexico Beach, a seaside community east of Panama City, with a population of a little more than 1,100 residents.

Michael Brennan, branch chief of the National Hurricane Center's hurricane-specialist unit, said the storm revealed the heightened risk of coastal living.

"Michael went from basically forming to making landfall as a Category 5 in three days," Brennan said. "People think they are going to have a lot of time to watch a storm like an Irma come all the way across the Atlantic and have days and days to think about it and get ready. Michael was a pretty stark reminder that that is not always the case."

Michael was yet another reminder of what emergency managers routinely urge: Floridians need to have a plan at the start of the season.

"Know what you need to do, know what your risks are in a storm surge, know what your vulnerability is to wind and freshwater flooding," Brennan said. "Know if you are asked to leave your home where you are going to go and

how you are going to make that happen and do that quickly."

Brennan said Mexico Beach was spared greater tragedy by its size.

"The challenge with a storm like Michael that hits a more populated area is you could have thousands of people left in an area that's vulnerable to storm surge as opposed to less than a hundred left in Mexico beach," Brennan said. "It's a small enough area there that you were able to get people out on the last day."

"We have multiple major metropolitan areas that are very vulnerable to storm surge and have millions of people living in them and hundreds of thousands of people you will need to evacuate," he said. "It's a big challenge with a short-fuse storm like a Michael. People have to be ready to go very quickly."

Michael formed as a tropical depression on Oct. 7 and made landfall three days later as a Category 5 with winds of 160 mph. "We got away with one there because the storm intensified by 45 mph in the last 24 hours before landfall," said Masters of Weather Underground.

"That's a big increase and it makes it tough for warnings and evacuations in vulnerable areas," Masters said.

Masters said the U.S. needs to invest far more heavily on research into the forecasting of hurricane intensity.

"We can't have a situation where we blow the intensity forecast," he said. "The hurricane center did have Michael intensifying but they missed it by 35 mph. When it was 24 hours before landfall, their forecast was for a storm that was 35 mph less than what actually occurred."

If Michael had taken aim at Tampa Bay, its forecasted strength would have triggered a storm surge of 18 feet. But its actual strength would have spawned a surge of 30 feet, Masters said.

"You've got a huge population there. You've got evacuation routes that go underwater well before a storm arrives and a storm-unaware population to a large extent," Masters said. "The population there has not been exposed to a hurricane of any kind, a Category 1 or stronger since 1946."

Masters said researchers are finding that the rate of intensification of Atlantic hurricanes has increased in recent years.

"Rapid intensifiers are becoming more common, and that's bad news for unprepared populations," Masters said.

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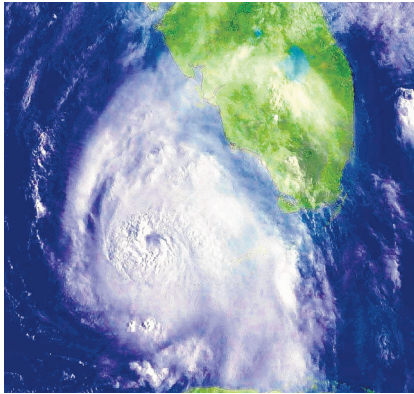
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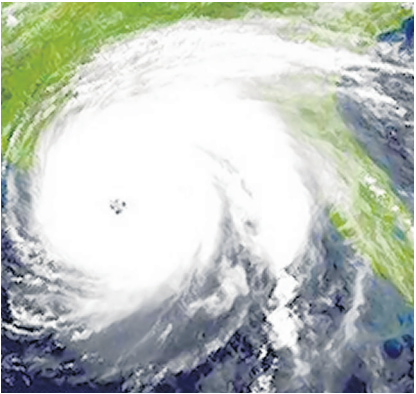
Charley

■ **Landfall:** Friday, Aug. 13, 2004, 3:45 p.m., near Punta Gorda and Port Charlotte in southwest Florida as a Category 4.
■ **Impact:** The fast-moving hurricane plowed through the I-4 corridor into Central Florida, where it downed trees and power lines, damaged roofs and caused extended outages. Winds were still at more than 90 mph and gusts of 105 mph were recorded at Orlando International Airport when Charley hit Orlando about 9 p.m. It was the strongest Florida hurricane since Andrew in 1992.



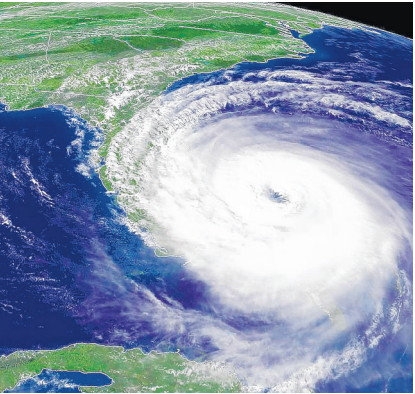
Frances

■ **Landfall:** Sunday, Sept. 5, 2004, 1 a.m., near Sewall's Point east of Stuart in southeast Florida as a Category 2.
■ **Impact:** Unlike Charley, Frances took a while to make it through Florida and clobbered the state with hours of winds and rain, causing widespread flooding across the region. The storm also damaged the Vehicle Assembly Building at the Kennedy Space Center in Brevard County. Residents still trying to clean up from Charley saw yet another storm ruin Labor Day weekend.



Ivan

■ **Landfall:** Thursday, Sept. 16, 2004, 2:50 a.m., near Gulf Shores, Ala., at the Alabama-Florida border as a Category 3. After moving through the southeast U.S. and weakening, Ivan's remnant low looped around and crossed southeast Florida. It came ashore for the final time in Louisiana.
■ **Impact:** Ivan was the only hurricane among the four that did not directly impact Central Florida. The storm devastated parts of Alabama and the Panhandle near Pensacola with 130-mph winds and heavy storm surge.



Jeanne

■ **Landfall:** Saturday, Sept. 25, 2004, 11:50 p.m., on Hutchinson Island near Sewall's Point in southeast Florida as a Category 3. Landfall mirrored where Frances arrived 20 days earlier.
■ **Impact:** It could have been even worse for Central Florida if Jeanne's path hadn't gone further west than expected before turning north. Still, the storm contributed plenty to the misery. Jeanne caused more damage to NASA's Vehicle Assembly Building, wiped out sections of beach along the east coast and dumped more rain on already saturated land.



ORLANDO SENTINEL FILES

Power poles blown over by Hurricane Charley lie across Lake Margaret Drive in southeast Orlando on Aug. 14, 2004, a day after the storm.

2004 review 6 WEEKS 4 HURRICANES

An unlucky turn the morning of Friday, Aug. 13, 2004, put Central Florida in the cross hairs of Hurricane Charley. The compact but powerful storm roared across the Interstate 4 corridor packing winds of more than 90 mph when it passed through about 9 p.m. The unexpected change in path resulted in Charley making landfall near Punta Gorda and Port Charlotte in southwest Florida as a Category 4 hurricane with 150-mph winds.

The devastating blow 15 years ago marked the first of four hurricanes in a six-week span to ravage Florida. The onslaught continued for Central Florida when Hurricane Frances barreled into southeast Florida on Labor Day weekend, Sept. 5, and subjected Orlando to a day of wind and soaking rain resulting in widespread flooding.

Less than three weeks later, still reeling and in disbelief, residents again weathered lines at home-supply businesses, grocery stores and gas stations in preparation for Jeanne, which essentially followed the same path as Frances and made landfall near Stuart just before midnight Sept. 25.

Between Frances and Jeanne, Hurricane Ivan marched through the Gulf and pounded the Panhandle region, making landfall in Alabama near the Florida border Sept. 16. It was the first time four hurricanes hit one state in the same season since Texas in 1886. The paths of Charley, Frances and Jeanne directly passed through Polk County, intersecting near Bartow.

By the end of September the power outages, long lines, plywood-covered windows, blue-tarped roofs, mountains of debris and flooded streets and homes were seared into memory. Anxious and weary Floridians counted the days until the end of hurricane season.



ORLANDO SENTINEL FILES

A banner thanking the many workers who helped in the aftermath of Charley is draped over the State Road 472 overpass at I-4 between Deltona and DeLand on Aug. 24, 2004.



ORLANDO SENTINEL FILES

A man tries to launch a kite on the breezes ahead of Hurricane Frances on Sept. 3, 2004. The home pictured sustained damage when Charley hit the Metro Orlando area three weeks earlier.



RICHARD GRAULICH/ASSOCIATED PRESS

Hundreds of grapefruit float under flooded trees at groves near Fort Pierce following Hurricane Frances. The storms took a heavy toll on citrus crops.



JOE BURBANK/ORLANDO SENTINEL

A woman waits in frustration at Costco as hurricane-weary shoppers stock up ahead of Jeanne in 2004.



RICARDO RAMIREZ BUXEDA/ORLANDO SENTINEL



ORLANDO SENTINEL FILES

Top: Squalls from Hurricane Jeanne throw water and aquatic grass from Lake Tohopekaliga in Kissimmee on Sept. 26, 2004. Left: A front-end loader sits atop debris that was ripped from the Kennedy Space Center's Vehicle Assembly Building by Hurricane Frances. Jeanne caused further damage to the structure.

What to bring to a shelter

STAFF REPORT

The Red Cross runs public shelters, but medical care will not be available. Shelters have food, but if you have special diet needs or want snacks, bring your own. You can't take guns or alcohol to shelters, but here is what you should bring:

- Three-day supply of water per person
- Flashlight, extra batteries
- Cellphone, with a battery-operated charger
- Radio with extra batteries
- Medicines
- Snacks
- Special-diet foods
- Baby food and diapers
- Pillows, blankets, cots, sleeping bags
- Comfortable clothing (two changes)
- Identification
- Photocopies of valuable documents
- Eyeglasses, hearing aids, dentures
- Toiletries, first-aid kit
- Cash
- Service animals
- Games, books or playing cards



RICARDO RAMIREZ BUXEDA/ORLANDO SENTINEL

Volunteers offload cots from the Red Cross to open a shelter in Central Florida for evacuees from Hurricane Irma in 2017. Make a list of necessary items to bring along.

Pack first-aid kit

Stock your first-aid kit and store in waterproof container:

- First-aid manual.
- Sterile adhesive bandages in assorted sizes.
- Sterile gauze pads and roller bandages in a variety of sizes.
- Hypoallergenic adhesive tape.
- Scissors and tweezers.
- Needle, for sewing and removing splinters.
- Bars of soap in their own plastic bags or waterproof containers.
- Moist towelettes.
- Antiseptic spray.
- Hydrogen peroxide.
- Rubbing alcohol.
- Iodine.
- Thermometer.
- Petroleum jelly to relieve itching.
- Ointments for burns and cuts.
- Latex gloves.
- Aspirin, acetaminophen and antacid tablets.
- Ointments for babies' teething

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Se Habla Español

Assist meteorologists by recording rainfall data

BY KRISTIN GIANNAS

With just two measurements, taken at the same time every morning, retired Disney executive Ben May is providing meteorologists with valuable data for the 2019 hurricane season from his Windermere backyard.

"They give you this big tube, and inside that one is a slender one," May said, describing the standard 4-inch cylinder rain gauge he keeps on his property.

May is part of a team of area volunteers who record rainfall data for the National Weather Service, which is used to evaluate flooding potential ahead of storms.

But there is a significant shortage of rainfall data in Central Florida, with the majority of the 200 active observers along the East Coast, according to NWS Meteorologist Jessie Smith. "We have community growth. We have a lot of new neighborhoods being developed, areas that used to be just farmland, or swamp, so we need additional support from these areas," Smith said.

Smith is hoping more volunteers will sign up in Orlando and Kissimmee specifically.

"Having an additional network of rainfall observers really gives us a good perspective of land-use area, and how flooding can affect these new communities, especially in the



Giannas

ever-growing Orlando area," Smith said.

Volunteers register online, with the "Community Collaborative Rail, Hail and Snow Network" or "CoCo-RaHs."

The nonprofit organization, sponsored by the National Oceanic and Atmospheric Administration

(NOAA) measures and maps precipitation (rain, hail and snow) across the country, sharing data with the National Weather Service, hydrologists, emergency managers and many other groups.

"I can't stress enough how crucial it would be to have additional observers ahead of hurricane season," Smith said. "That way when we do have the next storm approaching, we have this network of observers we know that we can rely on, to use the data for our rainfall forecast and flood operations."

The daily observation from May's backyard helps fill a piece of the weather puzzle, a small contribution that helps forecasters.

"Like water in a bathtub, the atmosphere is a big thing of waves — always moving, you can't grab it, it doesn't stop" May said.

"The more data you have, the more people you have on the ground to help meteorologists predict the weather, the better."

Kristin Giannas is a Fox 35 meteorologist.

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It's better for kids to keep busy

STAFF AND WIRE REPORTS

Children likely have no idea what to expect from a major hurricane and could very well be frightened. To cut down on your child's anxiety, not to mention the cries of "I'm bored," here is a list of things to prepare them for a hurricane and to keep them entertained.

Explain hurricanes

Tell your children that a hurricane is a giant, rainy windstorm that requires a lot of preparation and precaution.

The more children know about the storm and safety procedures, the more confident they will be. But keep it simple; detailed information is useless if children can't digest it.

Younger children may have trouble understanding the idea of a hurricane. Talk to them instead about its effects and that it could leave them without electricity.

Using a map, help older children name the states and cities where hurricanes are likely to strike. Have them mark where you live in the hurricane zone.

Ask children, whatever their age, to make a list of what they do during a typical day. Explain to them that those activities might change if a hurricane hits: School might close; they may not get to play outside; they may have to eat different foods.

Involve kids in prep

It's important for children to feel they are a part of the preparations. Allow children to help plan and pack safety kits, help check hurricane shutters and make preparations for their pets.

Children should be reminded of their hurricane lessons throughout the year; a crash course in hurricanes only hours before one arrives may cause them to panic.

As a part of the preparation process, your child can pack a supply kit equipped with all the soothing items they might take on an overnight stay at Grandma's.

Give them a checklist of things to gather. Some suggestions: games, toys, blankets, stuffed animals, favorite books, favorite snacks, a toothbrush and toothpaste, rain gear, paper and pencils, coloring books, a flashlight.

Plan fun activities

■ **Card games.** Games and puzzles are a good way to pass the time. As preparation for the storm, research new card games

on the internet and print directions. Gather the family and learn the rules together.

■ **Build a fort.** Pillows. Check. Blankets. Check. Sofa cushions. Check. Dining room chairs. Check. Hours of fun. Check.

■ **Play flashlight tag.** Stock up on as many batteries as you can find before the storm. Flashlight tag is an oldie but goodie and will have parents giggling like schoolgirls along with their kids. Some variations to try: Leave the flashlights on and allow the hiding players to change positions as they see the "It" person approaching. Players also can be put in "jail," where they can be rescued.

■ **Conduct a scavenger hunt.** With or without a flashlight, searching the house for treasure can keep kids (and parents) busy for hours. And it's so much more fun to bump around in the dark to find that long lost doll or forgotten box of toy cars. Some variations to try: Hide pieces of a puzzle around the house (be sure to keep count). When you've found all of the pieces, you have another project to work on. You can also use your digital camera as part of the fun. Take a picture of something — make sure it is cropped closely and isn't too easily identifiable — and ask the other players to find it.

■ **Cook with them.** Choose meals that are easy to prepare and let your kids help cook. No power? Get the fireplace or grill going and everyone can cook their own hot dogs on a stick. Don't forget the s'mores for dessert.

■ **Devour the ice cream.** There's no better excuse than a dead freezer to demolish your ice cream supply. Since the best way to conserve your freezer's chill is to keep the door closed, have someone time your mad dash for sugar.

Make the door opening excursion count by making a list before the storm of all the freezer items you should eat. A few frozen peas on top of that sundae might make for an interesting round of Truth or Dare.

Talk to your children

Before, during and after the storm, it's important to talk to your children, according to the National Child Traumatic Stress Network. Encourage them to ask questions and express concerns. Reassure them that they are safe, stay upbeat, keep them busy and maintain regular family routines.

Children are influenced by the adults around them, so remaining calm and staying aware of adult conversations about the hurricane's aftermath will help your child weather any storm.

Food-prep checklist

As hurricane season draws near, it's time to check and double-check your food and water supplies. Keep the following in mind:

Hurricane food prep by the numbers

- 1 gallon water per person per day (don't forget pets!). Don't forget: Your tap water is still safe to drink, it's only dicey after a power outage. Fill clean pitchers and water bottles now. Also, you can fill freezer bags with water and freeze them ahead of time. Just let them thaw in a water pitcher for clean drinking water.
- 3-7 days worth of food for each person (again — don't forget pets! Cat parents — grab extra kitty litter).



STEPHEN M. DOWELL/ORLANDO SENTINEL (ABOVE); FILE PHOTOS (BELOW)

Hurricane food safety by the numbers

- 4 hours: the amount of time a refrigerator will keep food cold.
- 24 hours: the amount of time a half-full freezer will hold its temperature.
- 48 hours: the amount of time a full freezer will hold its temperature.
- 40 degrees and below: the temperature a freezer item should still be at to be refrozen. If it still has ice crystals, it's also safe.

More food safety tips

- Don't taste a food to determine if it's gone bad. If you're unsure of it, throw it out.
- Keep the refrigerator and freezer doors closed as much as possible.

Food items to store

- Tough-skinned fruits and vegetables: Citrus, carrots, apples, avocados, etc. Wash and dry them before the storm.
- Protein-rich foods: Peanut butter, protein bars, unsalted nuts, trail mix, beans, etc.
- Smoked or dried meats and hard cheeses. (Nonperishable and goes well with a glass of wine!)
- Instant drinks: Shelf-stable milk, instant coffee and tea.
- Comfort foods: Cookies, hard candy, chips, crackers.
- Canned items: Meats, fruits (in juice), vegetables, soups, stews and chilis.
- Condiments: You're going to need them to spice up those canned vegetables! Snag some hot sauces, mustard, oil and vinegar.

Gather cooking tools

- A manual can opener, appliance thermometer, pans or sheets that can be used on a grill, oven mitts, matches, cooking tools, grill fuel, moist towelettes, paper towels, gel fuel such as Sterno, a grill light or flashlight designated for cooking, pet food, paper plates and plastic utensils.

Post-storm grilling tips

- Never use a grill inside a house.
- Make sure your grill is a few feet from your home and far away from awning overhangs, plants, etc. Never leave it unattended, especially around small children or pets.
- Use only approved accelerant fuels for charcoal fires — NOT gasoline.
- Charcoal briquettes need about 48 hours to cool before they're thrown out. Soak the charcoal in water before tossing.

Staff Report



2019 HURRICANE SURVIVAL GUIDE

The how and why behind storm names



King

BY JAYME KING

As a local television meteorologist, one of the top weather questions I am asked is, "How are tropical systems named and why do we name them in the first place?"

Many years ago, the meteorological community figured by naming tropical storms and hurricanes, people would remember the names of the storms, keeping populations vigilant and aware.

It also made the meteorologist's job of communicating specifics of certain storm more effective, letting those in the storm's path know how to prepare. Before the start of each season, experts approve a previously crafted formal list of names.

The U.S. National Hurricane Center started this ritual nearly 70 years ago. Currently, The World Meteorological Organization develops, maintains and approves tropical system names.

In 1950 the U.S. National Hurricane Center developed storm-naming for the Atlantic Ocean storms. Storms were named according to the alphabetic sequence.

The names used were recycled year after year. For example, the first hurricane of a season was always named "Able," the second "Baker," then "Charlie" and so on.

The naming process was revised in 1953 and storms were given female names to avoid the repetitive use of names. By doing this, the National Weather Service was following in the footsteps of Naval meteorologists, who named the storms after women, similar to how ships were traditionally

2019 ATLANTIC NAMES

Andrea	Humberto	Olga
Barry	Imelda	Pablo
Chantal	Jerry	Rebekah
Dorian	Karen	Sebastien
Erin	Lorenzo	Tanya
Fernand	Melissa	Van
Gabrielle	Nestor	Wendy

named for women.

Then, in 1979, the system was revised yet again to include both female and male storm names.

Tropical storms are given names when they display a rotating circulation pattern and wind speeds of at least 39 miles per hour. A tropical storm develops into a hurricane when wind speeds reach 74 mph.

Lists of hurricane names have been developed for many of the major oceans around the world. Today, there are six lists of hurricane names in use for Atlantic Ocean systems. These lists rotate, one each year. That means the list for this year will come up again six years from now.

The only exception would be a storm name that was particularly damaging. These names are retired for sensitivity, legal and historical reasons. You will never see another storm named "Katrina," which was retired in 2005 after the tremendous impact on New Orleans. The same can be said for "Charley," which was retired after the 2004 Atlantic hurricane season following the devastation of Southwest Florida.

Jayme King is a Fox 35 meteorologist.

Using a generator safely

Generators can be deadly if used improperly. Here is what you need to do to use a generator safely:

- Do NOT use the generator inside. They can cause carbon monoxide poisoning and also could start a fire.
- Do have a carbon monoxide detector.
- Do not place it on a patio, in a garage or under and eave.
- Keep the generator at least 20 feet away from your house
- Do not keep the generator near a window.
- Do not refill generators with gas while it's hot.
- Do not overload it with too many appliances.
- Use recommended extension cords.

- Store the gasoline for it safely.
- Use a fuel stabilizer.

Richard Tribou



STAFF/MCT

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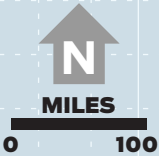
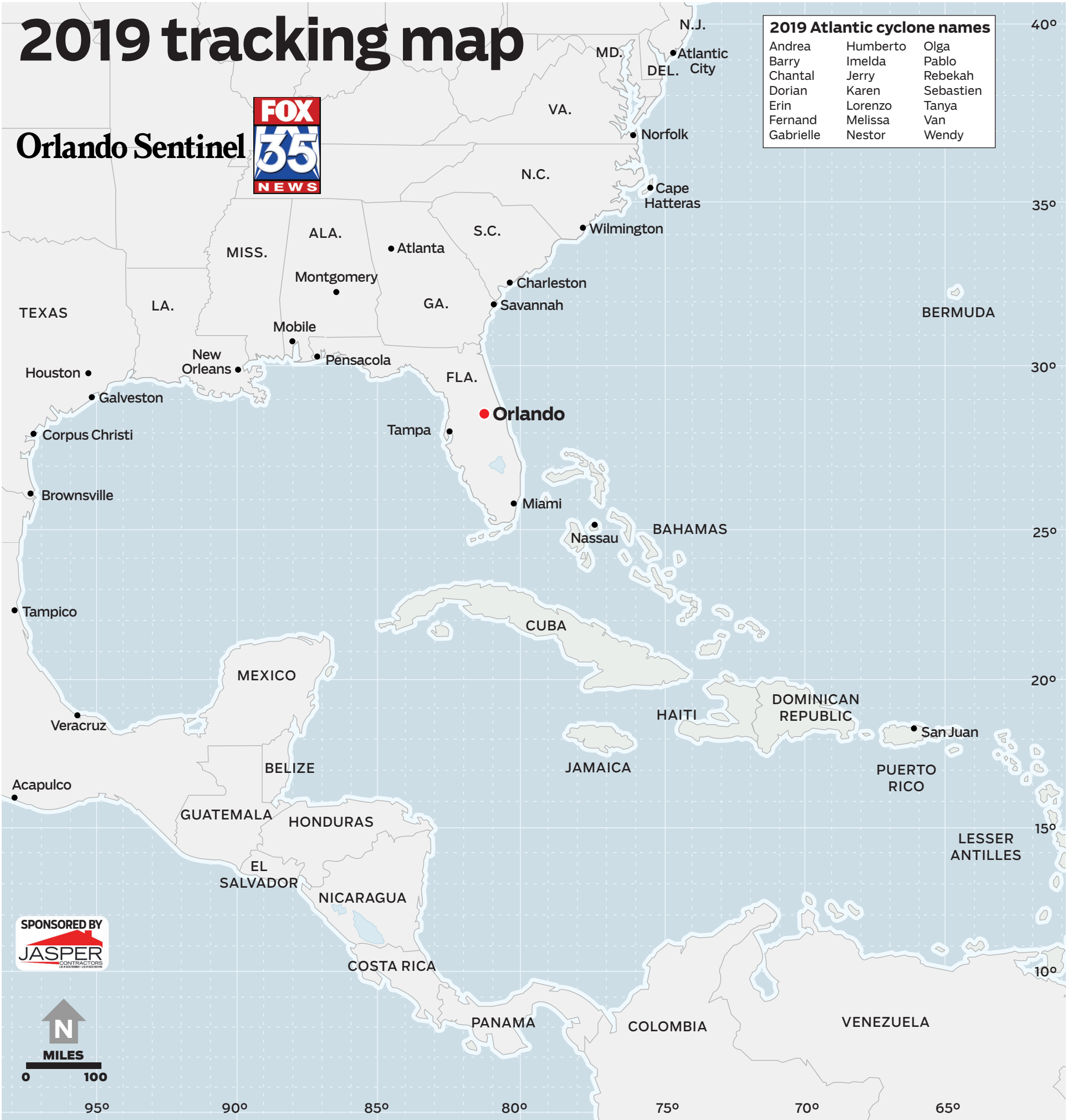
PolicyAdvocate.com

2019 tracking map

Orlando Sentinel



2019 Atlantic cyclone names		
Andrea	Humberto	Olga
Barry	Imelda	Pablo
Chantal	Jerry	Rebekah
Dorian	Karen	Sebastien
Erin	Lorenzo	Tanya
Fernand	Melissa	Van
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STAGE 2

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THE
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STAGE 3

RESTORING
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FEEDERS



STAGE 4

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STAGE 5

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